

What is claimed is:

1. A magnetic thin film head comprising:
a write head element; and
a read head element;

5 wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

10 wherein Ni in composition of a formed layer is 80.8wt% to 82.0wt%.

2. A magnetic thin film head according to

15 claim 1, in which said Ni is composed of an initially formed layer having a thickness of 1.0 μ m is 80.8 to 82.0 wt%, and of an upper layer on said initially formed layer 1.0 μ m thick is 81.0 to 81.2 wt%.

- 20 3 A magnetic thin film head comprising:

 a write head element; and
 a read head element;

 wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

25 wherein a magnetostriction constant λ

representing a magnetic characteristic of said ferromagnetic film is -2.0 to -7.0×10^{-7} in an initially formed layer having a thickness of $1.0 \mu m$, and

5 wherein said magnetostriction constant λ is -3.0 to -4.0×10^{-7} in an upper layer on said initially formed layer $1.0 \mu m$ thick.

10 4 A magnetic thin film head comprising:
a write head element; and
a read head element;
wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating 15 in the vicinity of a sensor film arranged as said read head element,

wherein a film thickness exceeding $1.0 \mu m$ in said ferromagnetic film formed of NiFe permalloy material has an Ni content accuracy of ± 0.1 wt%, and 20 wherein a film thickness of $1.0 \mu m$ or less in said ferromagnetic film formed of NiFe permalloy material has an Ni content accuracy of ± 0.3 wt%.

25 5. A method of fabricating a magnetic thin film comprising the step of:
(a) forming a write head element;
(b) forming a read head element;
wherein a ferromagnetic film having a soft

magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

5 wherein Ni in composition of an initially formed layer having a thickness of $1.0 \mu m$ is 80.8 to 82.0 wt%, and

wherein Ni in composition of an upper layer on said initially formed layer $1.0 \mu m$ thick is 81.0 to 10 81.2 wt%,

(c) timewise regulating a current density of permalloy electroplating under control of a personal computer;

wherein a plurality of time periods and a 15 plurality of current values are preset for film formation.

6. A method of fabricating a magnetic thin film comprising the step of:

20 (a) forming a write head element; and

(b) forming a read head element;

wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating 25 in the vicinity of a sensor film arranged as said read head element,

wherein a magnetostriction constant λ representing a magnetic characteristic of said

ferromagnetic film is -2.0 to -7.0×10^{-7} in an initially formed layer having a thickness of $1.0 \mu m$, and

wherein said magnetostriction constant λ is -3.0 to -4.0×10^{-7} in an upper layer on said initially formed layer $1.0 \mu m$ thick,

(c) timewise regulating a current density of permalloy electroplating under control of a personal computer;

10 wherein a plurality of time periods and a plurality of current values are preset for film formation.

7. A method of fabricating a magnetic thin film comprising the step of:

- (a) forming a write head element; and
- (b) forming a read head element;

wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

wherein a film thickness exceeding $1.0 \mu m$ in said ferromagnetic film formed of NiFe permalloy

25 material has an Ni content accuracy of ± 0.1 wt%, and

wherein a film thickness of $1.0 \mu m$ or less in said ferromagnetic film formed of NiFe permalloy material has an Ni content accuracy of ± 0.3 wt%,

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(c) timewise regulating a current density of permalloy electroplating under control of a personal computer;

5 wherein a plurality of time periods and a plurality of current values are preset for film formation.

8 A magnetic disk apparatus having a magnetic thin film head comprising:

10 a write head element; and
a read head element;

wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

wherein Ni in composition of an initially formed layer having a thickness of $1.0 \mu m$ is 80.8 to 82.0 wt%, and

20 wherein Ni in composition of an upper layer on said initially formed layer $1.0 \mu m$ thick is 81.0 to 81.2 wt%.

9 A magnetic disk apparatus having a magnetic thin film head comprising:

a write head element; and
a read head element;
wherein a ferromagnetic film having a soft

magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

5 wherein a magnetostriction constant λ representing a magnetic characteristic of said ferromagnetic film is -2.0 to -7.0×10^{-7} in an initially formed layer having a thickness of $1.0 \mu m$, and

10 wherein said magnetostriction constant λ is -3.0 to -4.0×10^{-7} in an upper layer on said initially formed layer $1.0 \mu m$ thick.

15 10 A magnetic disk apparatus having a magnetic thin film head comprising:

A magnetic thin film head comprising:
a write head element; and
a read head element;

20 wherein a ferromagnetic film having a soft magnetic characteristic and a magnetic shield function is formed of NiFe permalloy material by electroplating in the vicinity of a sensor film arranged as said read head element,

25 wherein a film thickness exceeding $1.0 \mu m$ in said ferromagnetic film formed of NiFe permalloy material has an Ni content accuracy of ± 0.1 wt%, and

 wherein a film thickness of $1.0 \mu m$ or less in said ferromagnetic film formed of NiFe permalloy

material has an Ni content accuracy of ± 0.3 wt%.